Helping girls stay with science and math

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National data shows that that women are still not selecting STEM (science, technology, engineering, and math) majors as frequently as men, but the best way to counter this imbalance is still up for debate. The Laboratory's Girls in STEM program is researching which approaches work best to improve girls' attitudes towards the study and practice of STEM activities, while also making a positive impact in the lives of local girls.

The program matches elementary- and middle-school-aged girls with individual mentors from the Laboratory who offer one-on-one assistance with STEM homework and support in school for both STEM and other topics. A week-long summer camp with activities at both Girls Inc. of Santa Fe and at Ghost Ranch with both Lab and near-peer mentors also helps boost the girls' skills and interest.

"The program is currently focusing on 10 girls who began the program as sixth-grade students at Abiquiu elementary school, and we will be working with them and following their progress all the way through high school," says the Laboratory's Elizabeth Coronado, who runs the program.

Classroom Visits

During the first year of the program in the 2016–17 school year, Lab volunteers visited the classroom three times a week. These were both individual mentors and other researchers who gave demonstrations and talks for the whole class.

The most recent year saw the students move to middle school, where intensive time is more difficult to organize, but the mentors have stayed involved with the students. "I had the opportunity to help with a STEM camp devoted to brain waves and dinosaurs and my protegee attended this camp," says mentor Katrina Koehler." It was so rewarding to see that she was interested enough in STEM to participate without her peers."

"One mentor mailed her mentee a book about a woman scientist on a regular basis, even though her protégé moved to a school in Gallina. She then tried to arrange a time to talk about each one," says Coronado.

Summer Camp

The summer camp with Girls Inc. at Ghost Ranch gave the mentors and students a chance to keep their connection strong, and also gave students the opportunity to team with Santa Fe-based Girls Inc. mentors and students. "We are so excited about this opportunity to serve more girls from the Northern New Mexico community," said

Madonna Hernandez, Girls Inc. Director of Programs. “We look forward to continuing this collaboration in order to empower even more girls to be strong, smart, and bold.”

In addition to focusing on STEM education, the program also looks at broader issues including self-confidence and making positive decisions. This is done through research-based hands-on experiential activities which include team-building and communication, as well as a strong focus on the particular issues girls face every day.

"Middle school can be a difficult time, and success in STEM areas depends not just on STEM-specific education, but on a wider range of social-emotional and societal factors," says Coronado.

As well as helping the individual girls in the program, the data and research collected will help answer some basic questions including the age at which educators and community outreach organizations should begin steps to encourage and maintain girls’ interest in STEM, and the forms such measures should take.

The study’s initial findings from the first year were presented at the National Science Teacher Association Conference in Atlanta in March of 2018.

The U.S. Department of Energy funds the program partly through its science education community service time, which pays Lab employees for up to 32 hours per calendar year to support STEM-related programs. The Lab’s integrated program management group donates the working capital needed for supplies, for travel, and for conference presentations.

“Our early research suggests that sustained intensive intervention with personal connections shows positive results, but it will be important to see what results show as the girls get older,” says Coronado. “It’s great to be working on something that might ultimately benefit a lot of future students, but knowing we’re making a difference for the girls we’re working with right now is also rewarding. More rewarding is the concept that cooperation among community organizations provides the village it takes to afford rural students opportunities to experience real world STEM experiences.”